

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

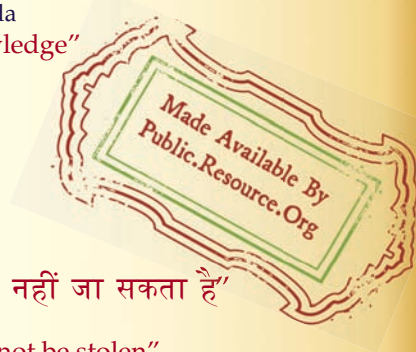
IS 1890-3 (1995): Quantities and Units, Part 3: Mechanics
[PGD 1: Basic Standards]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS 1890 (Part 3) : 1995
ISO 31-3 : 1992

भारतीय मानक
मात्राएँ और इकाइयाँ
भाग 3 यांत्रिकी
(दूसरा पुनरीक्षण)

Indian Standard
QUANTITIES AND UNITS
PART 3 MECHANICS
(*Second Revision*)

UDC 53081 : 531/534

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

June 1995

Price Group 8

NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical with ISO 31-3 : 1992 'Quantities and units — Part 3 : Mechanics' issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendation of the Basic Standards Sectional Committee (MSD 1) and approval of the Management and Systems Division Council.

The text of the ISO Standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker.
- b) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

This standard was first published in 1961 and then revised in 1982.

In this second revision, the following changes have been made:

- a) The decision by International Committee for Weights and Measures (CIPM) in 1980 concerning the status of supplementary units has been incorporated.
- b) Units in use temporarily have been transferred to the column 'Conversion Factors and Remarks'.
- c) The special remark on logarithmic quantities and units has been elaborated.
- d) The non-mechanical units 'watt hour' and 'electronvolt' have been deleted from this part of ISO 31 and transferred to IS 1890 (Part 5)/(ISO 31-5) and IS 1890 (Part 9)/(ISO 31-9) respectively.
- e) A number of new quantities and their units have been added such as impulse, angular impulse, static friction factor and efficiency.

In the adopted standard, normative references appear to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 31-0 : 1992	IS 1890 (Part 0) : 1995 Quantities and units: Part 0 General principles (<i>first revision</i>)	Identical
ISO 31-1 : 1992	IS 1890 (Part 1) : 1995 Quantities and units: Part 1 Space and time (<i>third revision</i>)	Identical
ISO 31-2 : 1992	IS 1890 (Part 2) : 1995 Quantities and units: Part 2 Periodic and related phenomena (<i>second revision</i>)	Identical
ISO 31-3 : 1992	IS 1890 (Part 3) : 1995 Quantities and units: Part 3 Mechanics (<i>second revision</i>)	Identical
ISO 31-4 : 1992	IS 1890 (Part 4) : 1995 Quantities and units: Part 4 Heat (<i>second revision</i>)	Technically Equivalent

(Continued on fourth cover)

AMENDMENT NO. 1 FEBRUARY 1997
TO
IS 1890 (PART 3) : 1995/ISO 31-3:1992
QUANTITIES AND UNITS
PART 3 MECHANICS

(Second Revision)

(Second cover page, National Foreword, last paragraph, last entry) —
Substitute the following for the existing matter:

ISO 31-4 : 1992	*IS 1890 (Part 4) : 1982/ISO 31/4-1978	Technically
	Quantities, units and symbols : Part 4	Equivalent
	Heat (<i>first revision</i>)	

(Second cover page, National Foreword, last line, matter appearing in brace) — Substitute 'third' for 'fourth'.

(Third cover page, National Foreword, second entry from top) —
Substitute the following for the existing matter:

ISO 31-6 : 1992	†IS 1890 (Part 6) Quantities and units :	Identical
	Part 6 Light and related electromagnetic	
	radiations (<i>first revision</i>)	

(Third cover page, National Foreword, last entry) — Substitute the following for the existing matter:

ISO 31-13 : 1992	†IS 1890 (Part 13) Quantities and units :	Identical
	Part 13 Solid state physics (<i>first</i>	
	<i>revision</i>)	

(Third cover page, National Foreword) — Insert the following matter at the end:

**Under revision.

†Under print.'

(MSD 1)

Reprography Unit, BIS, New Delhi, India

Indian Standard
QUANTITIES AND UNITS
PART 3 MECHANICS
(Second Revision)

1 Scope

This part of ISO 31 gives names and symbols for quantities and units of mechanics. Where appropriate, conversion factors are also given.

Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 31. At the time of publication, the edition indicated was valid. All standards are subject

to revision, and parties to agreements based on this part of ISO 31 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 31-4:1992, *Quantities and units — Part 4: Heat*.

3 Names and symbols

The names and symbols for quantities and units of mechanics are given on the following pages.

MECHANICS				Quantities
Item No.	Quantity	Symbol	Definition	Remarks
3-1	mass	m		Mass is one of the base quantities on which the SI is based.
3-2	volumic mass, mass density, density	ρ	Mass divided by volume	
3-3	relative volumic mass, relative mass density, relative density	d	Ratio of the density of a substance to the density of a reference substance under conditions that should be specified for both substances	
3-4	massic volume, specific volume	v	Volume divided by mass. $v = 1/\rho$	
3-5	lineic mass, linear density	ρ_l	Mass divided by length	
3-6	areic mass, surface density	$\rho_A, (\rho_S)$	Mass divided by area	
3-7 (3-9.1)	moment of inertia	I, J	The moment of inertia of a body about an axis is the sum (integral) of the products of its elements of mass and the squares of their distances from the axis	To be distinguished from 3-20.1 and 3-20.2. If there is a risk of confusion, the symbol J shall be used for the quantity 3-7.
3-8 (3-7.1)	momentum	p	Product of mass and velocity	

Units				MECHANICS
Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
3-1.a	kilogram	kg	The kilogram is the unit of mass; it is equal to the mass of the international prototype of the kilogram	Names of decimal multiples and sub-multiples of the unit of mass are formed by attaching prefixes to the word "gram" [CIPM (1967)]. $1 \text{ g} = 10^{-3} \text{ kg}$
3-1.b	tonne	t	$1 \text{ t} = 1\,000 \text{ kg}$	In the English language also called metric ton.
3-2.a	kilogram per cubic metre	kg/m^3		
3-2.b	tonne per cubic metre	t/m^3		In the English language also called metric ton per cubic metre. $1 \text{ t/m}^3 = 1 \text{ g/cm}^3 = 1 \text{ kg/l} = 10^3 \text{ kg/m}^3$
3-2.c	kilogram per litre	kg/l		
3-3.a	one	1		See the introduction, subclause 0.3.2.
3-4.a	cubic metre per kilogram	m^3/kg		
3-5.a	kilogram per metre	kg/m		
3-6.a	kilogram per square metre	kg/m^2		
3-7.a	kilogram metre squared	$\text{kg} \cdot \text{m}^2$		
3-8.a	kilogram metre per second	$\text{kg} \cdot \text{m/s}$		

MECHANICS (continued)				Quantities
Item No.	Quantity	Symbol	Definition	Remarks
3-9.1 (3-10.1)	force	F	The resultant force acting on a body is equal to the derivative with respect to time of the momentum of the body	
3-9.2 (3-10.2)	weight	F_g , (G), (P), (W)	The weight of a body in a specified reference system is that force which, when applied to the body, would give it an acceleration equal to the local acceleration of free fall in that reference system	When the reference system is the Earth, the quantity defined here has commonly been called the local force of gravity on the body. It is noteworthy that this weight comprises not only the resultant of the gravitational forces existing at the place where the body is, but also the local centrifugal force due to the rotation of the Earth. The effect of atmospheric buoyancy is excluded, and consequently the weight defined is the weight in vacuum. [See also Comptes rendus, 3rd CGPM (1901), p. 70]. In common parlance, the word "weight" continues to be used to mean mass, but this practice is deprecated.
3-10 (—)	impulse	I	$I = \int F \, dt$	For the time interval $[t_1, t_2]$, $I = p(t_2) - p(t_1)$ where p is momentum.
3-11 (3-8.1)	moment of momentum, angular momentum	L	The moment of momentum of a particle about a point is equal to the vector product of the radius vector from this point to the particle and the momentum of the particle. $L = r \times p$	

Units		MECHANICS (<i>continued</i>)		
Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
3-9.a	newton	N	$1 \text{ N} = 1 \text{ kg} \cdot \text{m/s}^2$	1 N is that force which, when applied to a body having a mass of 1 kg, gives it an acceleration of 1 m/s^2 .
3-10.a	newton second	N · s		
3-11.a	kilogram metre squared per second	$\text{kg} \cdot \text{m}^2/\text{s}$		

MECHANICS (<i>continued</i>)				Quantities
Item No.	Quantity	Symbol	Definition	Remarks
3-12.1	moment of force	M	The moment of a force about a point is equal to the vector product of any radius vector from this point to a point on the line of action of the force, and the force. $M = r \times F$	In the field of elasticity, M is used for bending moment and T for twisting or torsional moment.
3-12.2	moment of a couple	M	Sum of the moments of two forces of equal magnitude and opposite direction not acting along the same line	
3-12.3 (3-12.2)	torque	M, T	Generalization of the moment of a couple	
3-13 (—)	angular impulse	H	$H = \int M \, dt$	For the time interval $[t_1, t_2]$, $H = L(t_2) - L(t_1)$ where L is angular momentum.
3-14 (3-11.1)	gravitational constant	$G, (f)$	The gravitational force between two particles is given by $F = G \frac{m_1 m_2}{r^2}$ where r is the distance between the particles, and m_1 and m_2 are their masses	$G = (6,672 \, 59 \pm 0,000 \, 85) \times 10^{-11} \, \text{N} \cdot \text{m}^2/\text{kg}^2$ ¹⁾
1) CODATA Bulletin 63 (1986).				
3-15.1 (3-13.1)	pressure	p	Force divided by area	The symbol p_g is recommended for gauge pressure, defined as $p - p_{\text{amb}}$, where p_{amb} is the ambient pressure. Thus the gauge pressure is positive or negative according as p is larger or smaller than p_{amb} respectively.
3-15.2 (3-13.2)	normal stress	σ		
3-15.3 (3-13.3)	shear stress	τ		

Units		MECHANICS (<i>continued</i>)		
Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
3-12.a	newton metre	$\text{N} \cdot \text{m}$		The symbol for this unit shall be written in such a way that it cannot be confused with the symbol for the millinewton.
3-13.a	newton metre second	$\text{N} \cdot \text{m} \cdot \text{s}$		
3-14.a	newton metre squared per kilogram squared	$\text{N} \cdot \text{m}^2/\text{kg}^2$		
3-15.a	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$	bar (bar), $1 \text{ bar} = 100 \text{ kPa}$ (exactly) The use of the bar should be restricted to the existing uses in the field of fluid pressure.

MECHANICS (continued)				Quantities
Item No.	Quantity	Symbol	Definition	Remarks
3-16.1 (3-14.1)	linear strain, (relative elongation)	ε, e	$\varepsilon = \frac{\Delta l}{l_0}$ where Δl is the increase in length and l_0 is the length in a reference state to be specified	
3-16.2 (3-14.2)	shear strain	γ	$\gamma = \frac{\Delta x}{d}$ where Δx is the parallel displacement of the upper surface with respect to the lower surface of a layer of thickness d	
3-16.3 (3-14.3)	volume strain, (bulk strain)	ϑ	$\vartheta = \frac{\Delta V}{V_0}$ where ΔV is the increase in volume and V_0 is the volume in a reference state to be specified	
3-17 (3-15.1)	Poisson ratio, Poisson number	μ, ν	Lateral contraction divided by elongation	The quantity defined by Poisson was the reciprocal: $m = \frac{1}{\mu}$
3-18.1 (3-16.1)	modulus of elasticity	E	$E = \sigma/\varepsilon$	E is also called the Young modulus.
3-18.2 (3-16.2)	shear modulus, modulus of rigidity	G	$G = \tau/\gamma$	G is also called the Coulomb modulus.
3-18.3 (3-16.3)	bulk modulus, modulus of compression	K	$K = -p/\vartheta$	The strains ε , γ and ϑ in these definitions are those corresponding to the excess stresses σ and τ , and to the excess pressure p .
3-19 (3-17.1)	compressibility, bulk compressibility	κ	$\kappa = -\frac{1}{V} \frac{dV}{dp}$	See also ISO 31-4:1992, item No. 4-5.1.

Units		MECHANICS (<i>continued</i>)		
Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
3-16.a	one	1		See the introduction, subclause 0.3.2.
3-17.a	one	1		See the introduction, subclause 0.3.2.
3-18.a	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$	
3-19.a	reciprocal pascal, pascal to the power minus one	Pa^{-1}	$1 \text{ Pa}^{-1} = 1 \text{ m}^2/\text{N}$	

MECHANICS (<i>continued</i>)				Quantities
Item No.	Quantity	Symbol	Definition	Remarks
3-20.1 (3-18.1)	second moment of area, (second axial moment of area)	I_a , (I)	The second axial moment of area of a plane area (section) about an axis in its plane is the sum (integral) of the products of its elements of area and the squares of their distances from the axis	These quantities should be distinguished from 3-7. They have often been given the name "moment of inertia". The symbol I may be used for second moment of area when no danger of confusion exists with moment of inertia (3-7).
3-20.2 (3-18.2)	second polar moment of area	I_p	The second polar moment of area of a plane area (section) about a point in its plane is the sum (integral) of the products of its elements of area and the squares of their distances from the point	
3-21 (3-19.1)	section modulus	Z , W	The section modulus of a plane area (section) about an axis in its plane is the second moment of area divided by the distance from the axis to the most remote point of the area	
3-22.1 (3-20.1)	dynamic friction factor	μ , (f)	Ratio of frictional force to normal force, for a sliding body	The friction factor is also called the coefficient of friction.
3-22.2 (—)	static friction factor	μ_s , (f_s)	Maximum ratio of frictional force to normal force, for a body at rest	
3-23 (3-21.1)	viscosity, (dynamic viscosity)	η , (μ)	$\tau_{xz} = \eta \frac{dv_x}{dz}$ where τ_{xz} is the shear stress in a fluid moving with a velocity gradient dv_x/dz perpendicular to the plane of shear	This definition applies to laminar flow for which $v_z = 0$.
3-24 (3-22.1)	kinematic viscosity	ν	$\nu = \eta/\rho$ where ρ is the volumic mass	
3-25 (3-23.1)	surface tension	γ , σ	Force perpendicular to a line element in a surface divided by the length of the line element	

Units					MECHANICS (<i>continued</i>)
Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks	
3-20.a	metre to the fourth power	m^4			
3-21.a	metre cubed	m^3			
3-22.a	one	1		See the introduction, subclause 0.3.2.	
3-23.a	pascal second	$Pa \cdot s$			
3-24.a	metre squared per second	m^2/s			
3-25.a	newton per metre	N/m		$1 N/m = 1 J/m^2$	

MECHANICS (<i>concluded</i>)				Quantities
Item No.	Quantity	Symbol	Definition	Remarks
3-26.1 (3-24.2)	energy	E	All kinds of energy	
3-26.2 (3-24.1)	work	$W, (A)$	$W = \int \mathbf{F} \cdot d\mathbf{r}$	
3-26.3 (3-24.3)	potential energy	E_p, V, Φ	$E_p = - \int \mathbf{F} \cdot d\mathbf{r}$ where $\mathbf{F}$ is a conservative force	
3-26.4 (3-24.4)	kinetic energy	E_k, T	$E_k = \frac{1}{2} m v^2$	
3-27 (3-25.1)	power	P	Rate of energy transfer	
3-28 (—)	efficiency	η	Ratio of an output power to an input power	The output power and the input power shall be specified.
3-29 (3-26.1)	mass flow rate	q_m	Mass of matter which crosses a given surface divided by time	
3-30 (3-27.1)	volume flow rate	q_v	Volume of matter which crosses a given surface divided by time	

Units			MECHANICS (<i>concluded</i>)	
Item No.	Name of unit	International symbol for unit	Definition	Conversion factors and remarks
3-26.a	joule	J	$1 \text{ J} = 1 \text{ N} \cdot \text{m}$	1 J is the work done when the point of application of a force of 1 N is displaced through a distance of 1 m in the direction of the force.
3-27.a	watt	W	$1 \text{ W} = 1 \text{ J/s}$	
3-28.a	one	1		See the introduction, subclause 0.3.2.
3-29.a	kilogram per second	kg/s		
3-30.a	cubic metre per second	m ³ /s		

Annex A

(informative)

Units in the CGS system with special names

Quantity Item No.	Quantity	Unit Item No.	Name of unit with symbol	Definition and conversion factors
3-9.1	force	3-9.A.a	dyne: dyn	1 dyn is that force which, when applied to a body having a mass of 1 g, gives it an acceleration of 1 cm/s ² . 1 dyn = 10 ⁻⁵ N
3-23	viscosity, (dynamic viscosity)	3-23.A.a	poise: P	1 P is the viscosity of a fluid in which the velocity under a shear stress of 1 dyn/cm ² has a gradient of 1 (cm/s)/cm perpendicular to the plane of shear. 1 P = 1 dyn · s/cm ² = 1 g · cm ⁻¹ · s ⁻¹ = 10 ⁻¹ Pa · s
3-24	kinematic viscosity	3-24.A.a	stokes: St	1 St is the kinematic viscosity of a fluid with dynamic viscosity 1 P and volumic mass 1 g/cm ³ . 1 St = 10 ⁻⁴ m ² /s
3-26.1	energy	3-26.A.a	erg: erg	1 erg is the work done when the point of application of a force of 1 dyn is displaced through a distance of 1 cm in the direction of the force. 1 erg = 1 dyn · cm = 10 ⁻⁷ J

Annex B

(informative)

Units based on the foot, pound and second and some other units

The use of these units is deprecated.

Quantity Item No.	Quantity	Unit Item No.	Name of unit with symbol	Conversion factors and remarks
3-1	mass	3-1.B.a	pound: lb	1 lb = 0,453 592 37 kg (exactly)
		3-1.B.b	grain: gr	1 gr = $\frac{1}{7\,000}$ lb = 64,798 91 mg (exactly)
		3-1.B.c	ounce: oz	1 oz = $\frac{1}{16}$ lb = 437,5 gr (exactly) = 28,349 52 g
		3-1.B.d	hundredweight: cwt	1 cwt (UK) = 1 long cwt (US) = 112 lb (exactly) = 50,802 35 kg 1 cwt (US) = 100 lb (exactly) = 45,359 237 kg (exactly)
		3-1.B.e	ton	1 ton (UK) = 1 long ton (US) = 2 240 lb (exactly) = 1 016,047 kg = 1,016 047 t 1 ton (US) = 2 000 lb (exactly) = 907,184 7 kg = 0,907 184 7 t
		3-1.B.f	troy ounce or apothecaries' ounce	1 troy ounce = 480 gr (exactly) = 31,103 476 8 g (exactly)
3-2	volumic mass, mass density, density	3-2.B.a	pound per cubic foot: lb/ft ³	1 lb/ft ³ = 16,018 46 kg/m ³
3-9.1	force	3-9.B.a	pound-force: lbf	1 lbf = 4,448 222 N based on the (standard) value of $g_n = 9,806\,65\text{ m/s}^2$. This unit must be distinguished from the local weight of a body having a mass of 1 lb.
3-12.1	moment of force	3-12.B.a	foot pound-force: ft · lbf	1 ft · lbf = 1,355 818 N · m

Units based on the foot, pound and second and some other units (concluded)				
Quantity Item No.	Quantity	Unit Item No.	Name of unit with symbol	Conversion factors and remarks
3-15.1	pressure	3-15.B.a	pound-force per square inch: lbf/in ²	1 lbf/in ² = 6 894,757 Pa
3-20.1	second moment of area	3-20.B.a	inch to the fourth power: in ⁴	1 in ⁴ = 41,623 14 × 10 ⁻⁸ m ⁴
3-20.2	second polar moment of area			
3-21	section modulus	3-21.B.a	inch cubed: in ³	1 in ³ = 16,387 064 × 10 ⁻⁶ m ³ (exactly)
3-24	kinematic viscosity	3-24.B.a	foot squared per second: ft ² /s	1 ft ² /s = 0,092 903 04 m ² /s
3-26.1	energy	3-26.B.a	foot pound-force: ft · lbf	1 ft · lbf = 1,355 818 J
3-27	power	3-27.B.a	foot pound-force per second: ft · lbf/s	1 ft · lbf/s = 1,355 818 W 1 horsepower (hp) = 550 ft · lbf/s (exactly) = 745,699 9 W

Annex C (informative)

Other units given for information, especially regarding the conversion factor

The use of these units is deprecated.

Quantity Item No.	Quantity	Unit Item No.	Name of unit with symbol	Conversion factors and remarks
3-1	mass	3-1.C.a	metric carat	1 metric carat = 200 mg (exactly)
3-5	lineic mass, linear density	3-5.C.a	tex	1 tex = 10^{-6} kg/m
3-9.1	force	3-9.C.a	kilogram-force: kgf	1 kgf = 9,806 65 N (exactly) The symbols kgf (kilogram-force) and kp (kilopond) are both used. This unit must be distinguished from the local weight of a body having a mass of 1 kg 9,806 65 m/s ² is the standard acceleration of free fall [3rd CGPM, (1901)].
3-12.1	moment of force	3-12.C.a	kilogram-force metre kgf · m	1 kgf · m = 9,806 65 N · m (exactly)
3-15.1	pressure	3-15 C a	standard atmosphere: atm	1 atm = 101 325 Pa (exactly)
		3-15 C b	kilogram-force per square metre kgf/m ²	1 kgf/m ² = 9,806 65 Pa (exactly)
		3-15 C c	torr Torr	1 Torr = $\frac{1}{760}$ atm (exactly) = 133,322 4 Pa
		3-15 C d	conventional millimetre of mercury mmHg	1 mmHg = 13,595 1 mmH ₂ O = 133,322 4 Pa
		3-15 C e	technical atmosphere at	1 at = 1 kgf/cm ² = 98 066,5 Pa (exactly) = 0,967 841 atm
		3-15 C.f	conventional millimetre of water mmH ₂ O	1 mmH ₂ O = 10^{-4} at = 9,806 65 Pa (exactly)

Other units given for information, especially regarding the conversion factor (<i>concluded</i>)				
Quantity Item No.	Quantity	Unit Item No.	Name of unit with symbol	Conversion factors and remarks
3-26.1	energy	3-26.C.a	kilogram-force metre: kgf · m	1 kgf · m = 9,806 65 J (exactly)
3-27	power	3-27.C.a	kilogram-force metre per second: kgf · m/s	1 kgf · m/s = 9,806 65 W (exactly)
		3-27.C.b	metric horsepower	1 metric horsepower = 75 kgf · m/s (exactly) = 735,498 75 W (exactly)

(Continued from second cover)

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 31-5 : 1992	IS 1890 (Part 5) : 1995 Quantities and units: Part 5 Electricity and magnetism (<i>first revision</i>)	Identical
ISO 31-6 : 1992	IS 1890 (Part 6) : 1995 Quantities: Part 6 Light and related electromagnetic radiations (<i>first revision</i>)	Technically Equivalent
ISO 31-7 : 1992	IS 1890 (Part 7) : 1995 Quantities and units: Part 7 Acoustics (<i>first revision</i>)	Identical
ISO 31-8 : 1992	IS 1890 (Part 8) : 1995 Quantities and units: Part 8 Physical chemistry and molecular physics (<i>first revision</i>)	Identical
ISO 31-9 : 1992	IS 1890 (Part 9) : 1995 Quantities and units: Part 9 Atomic and nuclear physics (<i>first revision</i>)	Identical
ISO 31-10 : 1992	IS 1890 (Part 10) : 1995 Quantities and units: Part 10 Nuclear reactions and ionizing radia- tion (<i>first revision</i>)	Identical
ISO 31-11 : 1992	IS 1890 (Part 11) : 1995 Quantities and units: Part 11 Mathematical signs and symbols for use in the physical science and technology (<i>second revision</i>)	Identical
ISO 31-12 : 1992	IS 1890 (Part 12) : 1995 Quantities and units: Part 12 Characteristic numbers (<i>first revi- sion</i>)	Identical
ISO 31-13 : 1992	IS 1890 (Part 13) : 1995 Quantities and units: Part 13 Solid state physics (<i>first revision</i>)	Technically Equivalent

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